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September 30, 1992

TO: Minerals File

FROM: Tony Gallegos, Reclamation Engineer

RE: Site Inspection, 5-M Incorporated, Silver Reef Mine, M/053/002, Washington County, Utah

Date of Inspection: September 24, 1992
Time of Inspection: 0900 - 1550
Conditions: Sunny, warm
Participants: Chris Rohrer, AML Program; Larry Gore, BLM; Holland Shepherd, Tony Gallegos, and Wayne Hedberg, DOGM

Purpose of Inspection: To collect detailed information regarding the features of the mine site in order to develop reclamation specifications.

The inspection began at the process area. All process facility structures were examined. Measurements and general construction features for these structures were noted. The precipitate in the main pregnant solution pond was essentially unchanged since the last inspection. A soil auger was used to evaluate the depth of the precipitate in this pond. Ten foot spacing intervals were used between auger/sample holes. Sediments have gradually eroded off from the leach pad into the north end of the pond. The sediments were readily augured and a maximum depth of 55 inches was measured approximately 30 feet out from the northeast edge of the pond liner/sediment interface. The dense evaporite precipitates toward the center of the pond were extremely difficult, if not impossible to auger (or shovel) through. At an approximate 12 inch depth, the evaporites became too hard to auger or dig through with a shovel ("shooter's spade"). Maximum precipitate depth is estimated to be at least 36+ inches in the center of the pond. It is believed that the sediments extend out under the denser evaporite salts in the center of the solution pond, the actual depth is uncertain. The residual pond leachate solutions were field analyzed and had a pH of @3.0.

The secondary or overflow pond contained water of approximately 1.5 feet in depth at the deepest point. The solutions contained in this pond were also field analyzed and had a pH of @4.0. The large earthen pond immediately south of the secondary pond was dry. The small pond near the scrap iron area contained water and wetlands type vegetation. In general, the process facilities were unchanged since the last site inspection.

The leach pad was the next area of focus. Several samples of the leached material were taken from various sites and depths. These samples will be used to evaluate the pH and composition of the leached material in order to develop a neutralization process if needed. Cross sections of the heap leached pad material were taken at approximately 100 ft intervals. These measurements along with measurements from the aerial photo will be used to estimate the volume of material on the pad.

The pachuca area was examined next. Approximately half of each of the three pachuca tanks is buried. The test leach pad and other equipment nearby were examined and measured. The various stockpiled materials in this area were also measured. Soil samples were taken from 3 of the stockpiles which seemed to be devoid of vegetation. Several areas of the site were identified as those where borrow material might be available, they include: a large pre-law waste rock dump north of the ponds; a more recently developed waste rock dump northeast of the leach pads; the fill material from a road running along the west side of the site; and two pre-law tailings dumps, due north of the leach pads. This material will be essential in backfilling/covering the ponds and leach pads.

The final task performed was the examination of the hydrology of the entire site in general. Theoretical reclamation adjustments to the hydrology were discussed from a vantage point near the AS&R shaft. Redirecting surface runoff from the area upgradient of the leach pad may be an option to include in the reclamation plan.

Mr. Larry Gore of the BLM was onsite to determine if any federal lands are involved with the 5-M site disturbance. He located several survey markers at the site which gave a preliminary indication that a portion of the processing area may involve federal land. He needed to check some maps at his office in order to verify this.

As a result of this inspection, it was felt that the reclamation bond amount is far from adequate to reclaim the site in the most suitable manner. Because the monies available will not support the most suitable treatments, the reclamation tasks should be prioritized according to safety hazard, environmental hazard and aesthetics. It was also felt that due to this monetary shortfall, the leach pad and pond materials would have to be reclaimed in place rather than removed to a pit for disposal.

In conclusion, the information collected during this inspection will be used to develop detailed reclamation specifications which will then be incorporated in the bid package for reclamation of the site. Chris Rohrer of the AML staff, was very helpful in assisting the Minerals Staff in "seeing" this site from the project contractors point of view as well as assisting in the actual data collection. This assistance was very much appreciated since this is the first site which the Minerals Program will be putting out to bid.

jb
cc: Lowell Braxton, DOGM
Chris Rohrer, AML
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